

2019-01

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<http://hdl.handle.net/10026.1/11351>

10.1007/s10734-018-0268-8

Higher Education

Springer (part of Springer Nature)

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Deciphering the sophomore slump; Changes to student perceptions during the undergraduate journey

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Key words: second year, sophomore, self-efficacy, belonging, curriculum

This is a post-peer-review, pre-copyedit version of an article published in Higher Education. The final authenticated version is available online at: [http://dx.doi.org/ 10.1007/s10734-018-0268-8](http://dx.doi.org/10.1007/s10734-018-0268-8)

Abstract

The second year of university is little-researched, despite being a focal point for declining performance, persistence and satisfaction. It is important to establish appropriate methods for studying this ‘sophomore slump’ and to pinpoint specific antecedents from broad domains noted in literature (e.g. students’ social integration, perceptions of the curriculum).

Using a novel methodology, 166 undergraduates were surveyed in successive years of study to derive a gold standard ‘within-subjects’ data sample. Under a replicated design, a ‘between-subjects’ sample of over 1000 students completed the same e-survey just once, in year one, two or three. Quantitative comparison of the responses across years showed over 85% agreement between samples. This endorses between-subject approaches (i.e. simultaneously surveying students from different years) to facilitate rapid interventions that benefit students before they graduate.

In terms of detailed findings, year two saw positive trends in students’ academic engagement (e.g. self-reported independent study time), social integration (e.g. feeling accepted, involvement in extra-curricular activities), and views on teaching staff (e.g. approachability). Although appraisals remained broadly favourable there was, in contrast, significant deterioration in global perceptions of the learning atmosphere (e.g. course enjoyment), as well as specific elements of the teaching provision (e.g. contact hours, feedback). Notably, there appeared to be little progression in students’ academic self-perceptions (e.g. confidence to make presentations, enter class debates). Year two also saw increased thoughts of drop-out. These results highlight the unique character of the second year at university and indicate potential target areas for enhancing this phase of the undergraduate journey.

Abstract word count: 249

Manuscript word count (including main text, footnotes, references, and figure captions but excluding abstract and title page): 7979

Introduction

Higher education (HE) researchers and practitioners have long been interested in how to support students to complete their studies (Tinto 2015). Considerable attention has been given to early undergraduate experiences, when many students first confront independent living (Scott and Cashmore 2011) and learning environments which require substantial self-regulation (Lowe and Cooke 2003). Many students who drop out do so in these opening stages, with disproportionate attrition amongst ‘non-traditional’ groups jeopardising efforts to widen participation (e.g. ethnic minorities; Quinn 2013). The past 20 years have seen improved drop-out rates in the UK (HESA 2017), with attention broadening to students’ success within their course (e.g. degree classification) and beyond (e.g. progression to employment/further study). Here, final stages of study are pivotal. The last year of most UK undergraduate programmes is heavily weighted when calculating degree classification. Also, whilst employability is increasingly considered early at university (e.g. Watson 2011), many progression-focussed activities cluster in the final year (e.g. CV workshops, mock interviewing).

Compared to these distal stages of undergraduate life, the intervening phase is not characterised by such obvious themes of transition. It does, nonetheless, enjoy distinctive characteristics. According to quality assurance frameworks, the second year represents an appreciable ‘step up’ in academic skills (e.g. criticality; Milsom and Yorke 2015). Moreover, in UK institutions year two typically marks the point when results contribute to degree classification (Yorke 2015). Many second year students face important, potentially stressful decisions. In the US some choose their major (Whittle 2016), whilst UK students on ‘sandwich programmes’¹ typically seek professional placements for the following year (Milsom et al. 2015). Aside from studies, second years often live in private accommodation (Stewart and Darwent 2015), where institutional support (e.g. wardens) is less accessible than in university residences.

In the US, research into the sophomore experience dates back six decades (e.g. Freedman, 1956). It has, however, emerged piecemeal (Yorke, 2015), prompting calls for sustained investigation amongst this population (Hunter et al., 2010). Relatively speaking, UK data is scarce (Whittle 2016), although a landmark project emerged from Liverpool John Moores University. The investigators ‘*started from a performance-orientated focus that...over time shifted to a student experience and psychology-related discourse*’ (Milsom et al. 2015, xiii). It appears that a range of inter-related influences are at play during the second year. To isolate specific, modifiable factors, models from the more heavily-theorised field of student persistence may be helpful.

¹ Extended programmes, where undergraduates spend an interceding year on professional placement.

For example, Tinto (2015) posits that persistence is driven by motivation, which is determined by the lower-order factors of self-efficacy, sense of belonging, and perceptions of the curriculum (Figure 1). A similar architecture may apply to student performance.

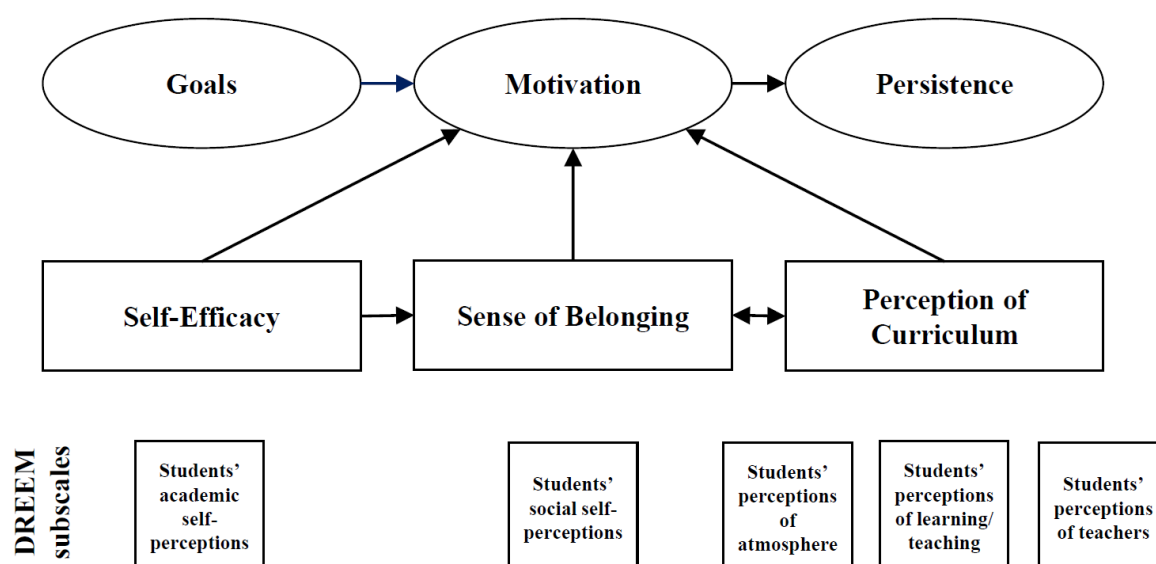


Figure 1. Tinto's (2015) model of student motivation and persistence, aligned with DREEM subscales

During the second year, there is evidence of maladaptive trends in both performance and persistence. A dip in marks has been observed both in the US and the UK. For example, analysis of 7000 module results at Liverpool John Moores showed that 32% of second years' marks were consistent with a 'good degree' (i.e. first or upper-second class), versus 36% and 46%, respectively, in years one and three (Yorke 2015). If of sufficient scale, a second year slump might compromise degree classification, irrespective of resurgent performance during following year(s). Longitudinal research suggests that many students can progressively improve performance (e.g. GPA) over the course of studies (Mabel and Britton 2018). Consequently, even stable performance between years one and two could reflect suboptimal student progress (Yorke 2015). Previous research indicated that a second year slump in marks occurred in around one quarter of programmes, without specifying the magnitude (Yorke and Zaitseva 2013).

Turning to persistence, Willcoxson et al. (2011) note that around half the cases of student attrition occur after year one. Consistent themes emerge from this subset of the literature. Ishitani (2016) revealed that frequency of external engagement (e.g. with study groups, lecturers) significantly predicted drop-out from year

one but not year two. Similarly, Willcoxson et al. (2011) found that external sources of support became less relevant to second years' thoughts about leaving university. Rather, intention to drop out became linked with individual perceptions of academic capability. Recent US research, featuring 'survival analysis', confirmed that drop-out remains a significant risk in later stages of study (Mabel and Britton 2018). Moreover, the students who dropped out late tended to be those with lower grades and credit completion, over the course of their university careers. This connection between performance and persistence gives weight to the possibility that both variables are influenced by similar antecedents. Second year drop-out remains little-researched in the UK.

Corroborating Tinto's model, motivation can indeed change during undergraduate study. Lieberman and Remedios (2007) found that relative to first year, students in year two had less belief that their course would be enjoyable and interesting, and lower 'mastery orientation' (i.e. motivation to master a discipline for its own sake). The inverse of mastery-orientation – 'performance-orientation' – is characterised by a desire to outperform others and/or gain approval from external evaluators (Senko and Harackiewicz 2002). Whilst performance-orientation has been associated with good grades, critics note that benefits may come via suboptimal study behaviours (e.g. shallow memorisation of material, non-engagement with peers; Midgley et al. 2001). Mastery-orientation is associated with greater enjoyment (Midgley et al. 2001) and strong marks in courses containing complex, challenging material (Grant and Dweck 2003). Consequently, many commentators deem it the most adaptive motivational profile on balance. Darwent and Stewart (2014) found that lower levels of mastery-orientation were associated with worse academic performance in second year cohorts.

In devising interventions, practitioners must decide which lower-order predictor(s) to focus on (Figure 1). Self-efficacy describes '*judgements of how well one can execute courses of action required to deal with prospective situations*' (Bandura 1982, 122). Whilst there is compelling evidence that self-efficacy relates to motivation and subsequent outcomes (Gore 2006), findings are mixed as to whether it can change over shorter timeframes. This is a pre-requisite for enhancing the undergraduate journey which, in the UK, typically lasts only three years. Raw measures of academic self-efficacy have remained consistent over longer intervals (e.g. six years; Caprara et al. 2011). Darwent and Stewart (2014) measured self-efficacy in years one and two and observed no differences, with similar null effects for eight other psychological variables (e.g. stress, metacognition). Should enhancements in academic self-efficacy be possible, they will not occur in a vacuum. Rather, as Caprara et al. (2011, 92) note, they will arise from '*changes in instructional experience*'. As such, one could argue for an additional link between perceptions of the curriculum and self-efficacy in Tinto's model (Figure 1).

Belonging refers to '*students' sense of being accepted, valued, included, and encouraged by others (teacher and peers) in the academic classroom setting and of feeling oneself to be an important part of the life and activity of the class*' (Goodenow 1993, 25). HE researchers would typically broaden this definition, to incorporate belonging to the wider institution (Thomas 2012). Whereas associations with academic performance are less researched, belonging has been linked with persistence at university (Webb et al., 2017). Notably, some approaches for enhancing belonging are firmly rooted in the curriculum e.g. field trips, enhanced access to faculty, group work (Masika and Jones 2016, Webb et al. 2017). Indeed, the academic sphere is considered '*the most important site for nurturing participation of the type which engenders a sense of belonging*' (Thomas 2012, 6). The symbiotic relationship between curriculum and belonging is represented by a double-headed arrow in Tinto's model (Figure 1).

The final element of Tinto's model is the curriculum itself which, according to contemporary interpretations, extends beyond the body of knowledge being taught (Kelly 2009) and may consider learning activities, methods of assessment, and exchanges with faculty and other students. As discussed, the curriculum might influence students' self-efficacy and sense of belonging. Moreover, it is arguably the most accessible area for HE practitioners to intervene. As Tinto (2015) acknowledges, there is uncertainty as to the specific curricular changes that institutions should make. Moving forward, measures of the educational environment are valuable in yielding granular detail about students' perceptions. Amongst available instruments, the 50-item Dundee Ready Educational Environment Measure (DREEM), which was originally devised for use in medical education settings, stands out. Composed via a Delphi process, and with demonstrated validity and reliability (Soemantri et al. 2010), tests show that DREEM picks up consistent student concerns relative to qualitative interviews (Denz-Penhey and Murdoch 2009). Such findings support the legitimacy of the five subdomains within DREEM, which share some parallels with Tinto's model (Figure 1). For example, social self-perceptions map to sense of belonging, and academic self-perceptions have similarities to self-efficacy. It should be acknowledged, however, that as with the current study, several academic self-perception items from DREEM capture the status quo. Unlike true measures of self-efficacy they do not probe respondents' beliefs that they can enhance performance going forward. For the current study, the subdomains of DREEM offer a useful framework for loosely classifying and comparing specific aspects of the educational environment. In particular, the delineation of general atmosphere, specific teaching and learning activities, and teaching staff, can help in specifying possible curriculum-related avenues for intervention. We interpret perceptions of atmosphere as 'global' appraisals of the curriculum (e.g. course enjoyment, satisfaction), whereas perceptions of learning/teaching

capture more specific elements of taught provision (e.g. teaching quality, feedback quality, use of learning technology, access to faculty). Finally, perceptions of teachers relate to their approachability, knowledgeability and capability.

Importantly, the DREEM has been expressly used to study the second year experience. Whittle (2016) used a modified version (DREEM-S), appropriate for various disciplines beyond medicine. When administered simultaneously to undergraduates at different stages, second years showed suppressed ratings in all five subdomains, relative to counterparts in years one and three. Importantly, a second tranche of data was collected three years later, in which time the institution had introduced support for second years around topics such as critical reading and revision. The dip in student perceptions was no longer observed, indicating that interventions can sustain positive perceptions of the educational environment. Using alternative qualitative methods, Zaitseva et al. (2013) summarised student perceptions between years. Some advances in year two (e.g. increased independent learning) contrasted with growing concern about factors which, if low in quality, could hamper progress (e.g. feedback). A clear rationale is emerging for examining curriculum-related factors. However, for the 50 items within DREEM-S, Whittle (2016) provided information on their relative rank between years but no raw scores. The current study helps quantify the change between years in how different aspects of the educational environment are perceived by students.

There are important methodological considerations when observing students across years. Studies by Whittle (2016), Willcoxson et al. (2011), and Zaitseva et al. (2013) used cross-sectional or ‘between-subjects’ (BS) designs. Data were simultaneously harvested from students in different years, permitting immediate comparison. The study by Lieberman and Remedios (2007) featured longitudinal analysis of a single cohort, representing a ‘within-subjects’ (WS) approach. Motivational measures were taken amongst final year undergraduates and compared with data collected from the same cohort in year one. Unfortunately, failure to record student ID numbers prevented matching of data at the level of the individual. WS designs carry a fundamental benefit. As the data collected at different time points comes from the same individuals, various factors are held constant (e.g. participants’ demographics, psychological traits, fee regime). Under BS designs such factors can differ between comparison groups, generating spurious findings if not accounted for during analyses. For example, current first and second years may share positive appraisals of their programme. If, however, the latter paid higher tuition fees, they may provide a lower global assessment of their university experience, which could be taken erroneously as evidence of declining teaching quality. Whilst WS designs are robust, they require students to be tracked over successive years. When results become available, most of the

experimental sample will have left. In contrast, BS comparisons can be made swiftly, such that suboptimal trends might be addressed in time to benefit the study population. Yorke and Zaitseva (2013) compared the utility of WS and BS approaches for assessing trends in academic performance between years. BS approaches matched ‘true’ WS data in around 70% of cases.

The current study makes a novel addition to the literature base. Students’ perceptions of the educational environment were compared between different years of study. Items which received less favourable appraisals during year two may be linked with contemporaneous phenomena such as slumping performance and drop-out, and offer potential avenues for intervention. For some items, responses were available from third year students. These were examined to address the important question of whether negative trends in year two are reversed later on. Students’ proclivity towards dropping-out was also captured. Uniquely, the study collected ‘gold standard’ WS data by surveying the same individuals at multiple time points. These WS data were compared against BS data from a larger pool of respondents. The replication of effects between samples is useful for interpreting their validity and judging if expeditious BS approaches are sufficiently accurate for studying student perceptions in different academic years.

Materials and Methods

Ethical approval was granted by the host institution, a public university in Southern England. The study drew on the Teaching and Learning Survey (TLS), an extensive e-questionnaire made available from March to May in successive years. The TLS featured items which correspond broadly with the DREEM subdomains (Table 1). The TLS also captured contextual factors, including withdrawal from HE (item #7) and engagement in paid employment (#1,2). As Yorke et al. (2015) found little association between academic slumping and demographic variables (e.g. gender, age), they were not analysed.

Most TLS items featured ordinal responses (e.g. Likert-type scales). For three items (#12,14,15) one response option was rarely selected, either in the WS or BS sample. Consequently, the seldom used category was combined with ‘about right’ and these items were treated as categorical, alongside #1 and #7.

Table 1. Responses to survey items, stratified by year and sample (within-subjects versus between-subjects)

	#	Survey Item	Response Options	Within-Subjects (WS)				Between-Subjects (BS)			
				Year 1	Year 2	Year 3	Year 2 v Year 1	Year 1	Year 2	Year 3	Year 2 v Year 1
Contextual information	1	Are you in paid employment during term time?	Yes No	21 79	31 69		$p < .01$	22 78	31 69		$\chi^2 (1) = 8.129$ $p < .01$
	2	Please indicate the number of hours per week you usually work in term time.	1-10 hours 11-15 hours 16-20 hours 21-25 hours >26 hours	54 26 9 6 6	49 26 11 11 3		$p = .629$	53 27 13 3 4	31 26 9 6 3		$U = 7631$ $p = .730$
	3	Which of the following best describes your attendance on timetabled course activities?	100% 75-99% 50-74% <50%	46 44 10 1	44 40 13 3	76 15 4 4	$Z = .645$ $p = .519$	36 48 14 3	43 42 11 4	56 30 13 2	$U = 58469$ $p = .110$
	4	In a typical term-time week, how many hours do you actually spend in independent study?	0-5 hours a week 6-10 hours a week 11-15 hours a week >15 hours a week	33 36 17 14	19 42 18 21	11 30 17 41	$Z = 3.343$ $p < .01$	31 36 21 12	20 42 21 17	13 35 24 28	$U = 54775$ $p < .01$
	5	How often do you formally meet with your personal tutor?	Never Less than once per term Once per term More than once per term	14 9 30 47	21 19 41 19		$Z = 5.423$ $p < .001$	12 17 33 38	19 23 36 22		$U = 40395$ $p < .001$
	6	What degree outcomes do you anticipate at this point?	1 st 2.1 2.2 3 rd Fail	21 58 19 3 0	13 64 18 3 2		$Z = 1.420$ $p = .156$	19 53 22 3 2	13 62 22 3 1		$U = 53006$ $p = .629$
	7	Have you considered or are you considering withdrawing from your course?	Yes No	15 85	23 77		$p < .10$	16 84	23 77		$\chi^2 (1) = 6.460$ $p < .05$
i. Perceptions of atmosphere	8	Are you enjoying your course?	Very much To some extent Mixed feelings Not very much/Not at all	55 36 9 1	48 37 10 5	52 28 13 7	$Z = 1.819$ $p < .10$	48 30 18 4	40 37 17 6	48 32 16 4	$U = 58683$ $p = .134$
	9	To what extent has your academic experience at university met your expectations?	Fully Mostly Meets some Not at all	34 52 13 2	20 63 14 4	21 56 18 5	$Z = 2.561$ $p < .05$	27 52 20 1	16 63 14 7	24 56 17 3	$U = 43329$ $p < .05$
ii. Perceptions of teaching/learning	10	Overall, how would you rate the teaching quality on your course/ programme of study this year?	Consistently good Variable but generally good Variable but generally poor Consistently poor	34 64 1 1	27 65 7 1	25 65 8 3	$Z = 1.960$ $p < .10$	30 66 4 0	23 68 8 1	29 65 5 1	$U = 50755$ $p < .01$
	11	There is too little use of technology for teaching and learning.	Strongly agree Agree Not sure Disagree Strongly disagree	5 12 21 48 15	1 17 20 49 13		$Z = .651$ $p = .515$	6 14 27 39 14	3 15 22 48 13		$U = 53350$ $p = .248$
	12	Do you think the quantity of assessment on your course is....?	Too much About right Too little	17 77 6	20 73 7		$p = .522$	18 76 6	16 75 9		$\chi^2 (1) = .085$ $p = .771$
	13	Is the feedback helpful?	Always Usually Sometimes Rarely Never	18 56 20 6 1	9 47 29 13 2	8 55 21 13 3	$Z = 4.749$ $p < .001$	15 50 27 6 2	13 45 32 9 1	14 48 29 7 2	$U = 50983$ $p < .10$
	14	Do you think contact time is....?	Too much About right Too little	1 67 31	1 60 39		$p < .10$	6 69 26	2 67 31		$\chi^2 (1) = 7.331$ $p < .05$
	15	Do you feel the number of meetings with your personal tutor is....?	Too much About right Too little	2 66 32	2 50 48		$p < .01$	2 58 39	2 51 47		$\chi^2 (1) = 4.042$ $p < .05$
	16	I have found large classes difficult to get used to.	Strongly agree Agree Not sure Disagree Strongly disagree	11 21 27 31 11	14 15 20 40 12		$Z = 1.173$ $p = .241$	10 23 26 34 7	8 14 28 42 8		$U = 49222$ $p < .01$
iii. Perceptions of teachers	17	I find the teaching staff friendly and approachable.	Strongly agree Agree Not sure Disagree Strongly disagree	33 55 8 3 1	29 60 8 2 1		$Z = .265$ $p = .791$	23 63 10 3 1	32 54 12 3 0		$U = 50163$ $p < .01$
	18	My personal tutor is approachable.	Strongly agree Agree Not sure Disagree Strongly disagree	54 31 11 2 2	57 30 9 2 3		$Z = .583$ $p = .560$	44 38 13 4 3	51 34 10 5 1		$U = 43018$ $p < .10$
	19	My personal tutor is encouraging.	Strongly agree Agree Not sure Disagree Strongly disagree	47 26 21 5 2	48 32 17 1 2		$Z = 1.260$ $p = .208$	39 34 22 3 2	44 34 18 4 1		$U = 42474$ $p = .137$
	20	My personal tutor gives me useful advice.	Strongly agree Agree Not sure Disagree Strongly disagree	41 28 22 6 2	42 37 14 4 3		$Z = 1.024$ $p = .306$	35 37 21 5 3	43 33 19 4 1		$U = 41328$ $p < .05$

	#	Survey Item	Response Options	Within Subjects				Between Subjects			
				Year 1	Percentage Year 2	Year 3	Year 2 v Year 1	Year 1	Percentage Year 2	Year 3	Year 2 v Year 1
iv. Academic self-perceptions	21	My personal tutor is comfortable discussing non-academic issues.	Strongly agree Agree Not sure Disagree Strongly disagree	24 26 45 3 2	38 22 32 2 5		Z= 2.586 p< .05	25 31 38 4 3	34 25 31 9 2		U= 42741 p= .237
	22	I am reticent about joining in class discussions.	Strongly agree Agree Not sure Disagree Strongly disagree	9 29 26 31 6	6 24 42 18 9		Z= .475 p= .635	7 30 32 24 8	7 25 32 26 10		U= 52022 p= .157
	23	I ask questions if I don't understand something.	Strongly agree Agree Not sure Disagree Strongly disagree	18 50 12 17 3	22 41 15 19 4		Z= .349 p= .727	15 46 17 18 4	17 48 14 17 3		U= 53540 p= .266
	24	I am anxious making presentations to a group.	Strongly agree Agree Not sure Disagree Strongly disagree	19 37 12 24 8	18 35 5 29 13		Z= 1.404 p= .160	22 35 12 23 8	24 34 10 25 7		U= 55512 p= .655
	25	I have found academic language/terminology difficult to get used to.	Strongly agree Agree Not sure Disagree Strongly disagree	6 30 19 37 8	6 22 16 43 12		Z= 2.179 p< .05	9 28 23 33 7	4 25 23 38 9		U= 49784 p< .05
	26	I have found the need for so much independent learning difficult to get used to.	Strongly agree Agree Not sure Disagree Strongly disagree	11 43 17 25 4	13 31 14 33 10		Z= 2.507 p< .05	12 38 19 25 6	11 34 19 32 6		U= 52689, p= .186
v. Social self-perceptions	27	To what extent has your social experience at University met your expectations?	Fully Mostly Meets some Does not meet at all	41 35 16 8	32 44 16 9	26 40 29 5	Z= 1.707 p< .10	33 35 23 9	34 40 13 13	41 33 20 7	U = 46588, p = .433
	28	How frequently on average do you take part in community activities and volunteering with the university?	Daily Weekly Monthly Less than once a month Not applicable	0 3 7 12 78	1 7 16 17 60		Z= 3.444 p< .01	1 6 8 10 75	1 9 10 23 57		U= 41991 p< .001
	29	How frequently on average do you participate in university clubs or societies?	Daily Weekly Monthly Less than once a month Not applicable	2 29 11 18 40	7 28 10 16 40		Z= .768 p= .442	2 24 13 15 45	7 29 7 18 39		U= 44992 p< .05
	30	How frequently on average do you go to the pub/clubs/gigs with friends from the university?	Daily Weekly Monthly Less than once a month Not applicable	2 42 20 15 21	4 41 19 17 19		Z= .768 p= .442	3 42 19 13 24	5 41 21 15 17		U= 46598 p= .194
	31	Fellow students accept me.	Strongly agree Agree Not sure Disagree Strongly disagree	40 47 11 2 2	43 43 10 4 1	36 44 18 0 3	Z= .394 p= .694	24 60 11 3 1	36 50 13 1 0	41 46 10 3 0	U= 43116 p< .001
	32	What I offer is valued.	Strongly agree Agree Not sure Disagree Strongly disagree	19 58 18 4 2	23 53 19 3 2	18 55 18 8 0	Z= .809 p= .418	14 57 26 3 1	23 52 21 3 1	25 52 20 3 0	U= 43682 p< .05
	33	I often meet or contact other students.	Strongly agree Agree Not sure Disagree Strongly disagree	46 41 8 5 1	45 43 6 5 2	33 59 5 3 0	Z= .000 p= 1.000	34 48 10 7 2	47 42 5 5 2	42 44 8 6 1	U= 41081 p< .001
	34	I have no place here at university.	Strongly agree Agree Not sure Disagree Strongly disagree	2 2 11 40 45	2 5 9 31 52	5 5 21 26 44	Z= .781 p= .435	2 5 15 37 41	3 4 11 35 47	3 6 9 34 48	U= 45282 p= .138
	35	I think people would miss me if I didn't turn up to lectures.	Strongly agree Agree Not sure Disagree Strongly disagree	14 46 21 9 10	12 41 27 14 6	10 23 36 18 13	Z= .000 p= 1.000	8 39 31 13 9	13 37 22 20 9	10 34 29 17 11	U= 47546 p= .717

In 2013 an invitation to complete the TLS was sent to all undergraduates making their first attempt at year one of a programme (respondents $n=614^2$). In 2014 a similar invitation was sent to all undergraduates making their first attempt at year two of a programme (respondents $n=491^3$). In 2015 all undergraduates making their first attempt at year three of a programme were invited to complete a modified TLS, which shared 12 items with the 2013/2014 versions (#3,4,8,9,10,13,27,31-35; respondents $n=413^3$). Overall response rate was around 10%.

To create the WS sample, ID numbers were used to identify individuals who responded in 2013 and 2014 ($n=166$). A sub-section ($n=46$) also responded in 2015, providing data for all three undergraduate years. Given their limited volume, year three data were visually inspected rather than being analysed statistically.

The remaining data, now stripped of WS respondents, formed the BS sample. Alongside data for comparing years one and two ($n=773$) there was a substantial number of third year respondents ($n=367$), which allowed statistical analysis. The methods for analysing third year data required independence between comparison groups. Hence, it was necessary to create additional data sets void of repeat respondents. The first set ($n=598$), comparing years two and three, excluded individuals who responded in 2014 and 2015. The second set ($n=755$), comparing years one and three, excluded individuals who responded in 2013 and 2015.

Preliminary analyses confirmed that a number of TLS items were not normally distributed, necessitating non-parametric tests. For WS analyses, the McNemar test was used to compare categorical items between years one and two. Some ordinal items violated an assumption of the Wilcoxon Signed-Rank test: symmetry in the distribution of the differences between the two associated groups. Hence, the Sign Test was used to compare years one and two. Turning to the BS sample, analyses of categorical and ordinal items were conducted using Chi-Square Tests and Mann-Whitney U Tests, respectively. Three bouts of BS analysis compared items between years one and two, two and three, and one and three. Throughout, a p -value of $<.10$ was used to judge significance. Finally, results from the respective WS and BS analyses of year one versus year two were compared to establish agreement.

²After exclusion of repeating students.

Results

Table 1 lists TLS items, distribution of responses across years, and results from analyses of year one versus year two. Shading is used to aid interpretation and highlight agreement between the WS and BS samples. Black shading denotes favourable changes from year one to two, whereas grey shading indicates adverse trends.

Contextual factors

Both samples showed significant growth from year one to two in the proportion who had considered withdrawal (#7) and were engaged in paid employment (#1). For those in work, there was no significant change in time commitment (#2); consistently, around 80% worked 1-15 hours per week.

Neither sample showed significant change in attendance between years one and two (#3), with the proportion reporting $\geq 75\%$ attendance consistently above 80%. Raw data from year three indicate a rise in those reporting 100% attendance, with BS analyses confirming third year attendance as significantly higher than year one ($U=41588$, $p<.001$) and year two ($U=31460$, $p<.05$). Independent study increased significantly between years one and two (#4), with both samples showing fewer reports of 0-5 hours/week and more reports of 6-10 hours/week. Year three saw additional engagement, with over 50% of the WS and BS samples now reporting above 10 hours/week. BS analyses confirmed that year three responses differed significantly from both year two ($U=28293$, $p<.001$) and year one ($U=36074$, $p<.001$).

In both samples, there was a significant downward trend between years one and two regarding frequency of contact with personal tutors (#5). The most common response changed from 'more than once per term' to 'once per term', with a significant minority of around 20% reporting no meetings. In both samples, there was no significant change in anticipated degree results (#6), with more than half of respondents expecting an upper second-class (2.1) degree and few anticipating a fail or third-class.

Perceptions of atmosphere

Between years one and two, both samples showed a consistent decline of 7-8% in the proportion who were very much enjoying their course (#8). This trend was significant in the WS sample and approached significance in the BS sample. Both samples also showed significant deterioration between years one and two for item #9.

Close inspection shows a marked reduction of over 10% in the proportion who perceived their academic expectations as fully met. For items #8 and #9, formal analysis of BS data showed no difference in responses between years one and three (#8: $U=498610$, $p=.660$; #9: $U=38006$, $p=.465$). This suggests a ‘U-shaped’ pattern, whereby student perceptions dip in year two before recovering in year three. Aside from the temporal patterns, it should be acknowledged that both these items received generally favourable ratings. Across years and samples, around 80% of responses regarding course enjoyment and academic expectations fell in the two most favourable categories.

Perceptions of learning/teaching

Broadly-speaking, appraisals of teaching quality (#10) were high. Across samples and years, around 90% of respondents selected the two most favourable options. Nonetheless, WS and BS analyses confirmed a significant drop between years one and two. In repetition of the U-shaped pattern, analysis of BS data revealed no significant difference between responses in years one and three ($U=46049$, $p=.346$).

A suite of other perceptions of learning/teaching showed significant adverse trends between years one and two, which were replicated in both samples. Raw percentages show that the proportion reporting feedback as always or usually helpful fell (#13). Again, BS analyses confirmed no difference between responses in years one and three ($U=45466$, $p=.588$), suggesting a U-shaped trajectory. Perceptions of too little contact time (#14) also grew significantly between years one and two. Similarly, the proportion who perceived the number of personal tutor meetings as inadequate (#15) grew between time points, from around one third to nearly half of respondents. A solitary item (#16) showed favourable change between years one and two. The proportion who disagreed/strongly disagreed that large classes were difficult to get used to rose by around 10%, reaching significance in the BS sample.

Although remaining items in this subdomain showed no significant changes between years, raw data are insightful. Across years and samples, around 75% of respondents viewed the volume of assessments as appropriate (#12), and under 20% agreed/strongly agreed that too little learning technology was used (#11).

Perceptions of teachers

As indicated by the lack of grey shading in Table 1, trends between years one and two were more favourable in this subdomain than the preceding ones. Across samples and years, almost 90% agreed/strongly agreed that teachers were friendly and approachable (#17). Moreover, the BS analyses showed a significant increase between years one and two, seemingly driven by redistribution of responses from ‘agree’ to ‘strongly agree’.

The apparent appetite for engagement with personal tutors, reported earlier (#15), makes sense given positive perceptions of their qualities. Between years one and two, raw percentages from both samples indicated improving perceptions of personal tutors as approachable (#18), encouraging (#19) and useful (#20), with effects for #18 and #20 significant in the BS sample. Findings were different regarding tutors’ capability around non-academic issues (#21). Consistent with #18-20, perceptions grew more favourable from year one to two, with a significant effect in the WS sample. Nonetheless, the proportion choosing ‘agree’/‘strongly agree’ was, at 50-60%, notably lower than items #18-20, with a considerable number ‘not sure’.

Academic self-perceptions

Again, the absence of grey shading (Table 1) indicates favourable trends between years one and two. Perceptions of academic language/terminology as a source of difficulty (#25) were significantly reduced in both samples. Perceptions that independent learning posed difficulties (#26) also reduced, with a significant effect in the WS sample. Closer reading of the data does, however, temper the positive impression. In year two, academic language and independent learning remained a reported source of difficulty for, respectively, around 30% and 45% of respondents. Furthermore, although the other items showed no adverse trends, they indicate persisting suboptimal academic behaviours. Across samples and years, only around 65% confirmed that they asked questions to clarify understanding (#23). Meanwhile, only around one third selected ‘disagree’/‘strongly disagree’ for items #22 and #24 to clearly indicate that they were comfortable making presentations and entering class debates.

Social self-perceptions

The preponderance of black shading in Table 1 indicates positive trends over time. A modest decline in perceptions that social experiences fulfilled expectations (#27) was restricted to the WS sample; driven, it appears, by a shift in the most frequent selection from ‘fully met’ to ‘mostly met’.

Elsewhere, both samples showed a significant rise in respondents’ engagement with community activities/volunteering (#28) – up to around 40% in year two – with a fall in those reporting no engagement (i.e. selecting ‘not applicable’). Regarding university clubs/societies (#29) and trips to pubs/clubs/gigs (#30), raw data from both samples suggest the frequency of engagement was largely stable across years. In the BS sample a significant difference between years did emerge for #29, driven, it appears, by greater participation per se (i.e. fewer selections of ‘not applicable’).

For items #31-35, raw data offer a positive impression. Across samples and years, at least 70% selected the two most favourable options, with the exception of #35 where the proportion who agreed/strongly agreed that they would be missed, should they not attend lectures, hovered around 50%. BS analyses confirmed significant improvement from year one to two in students’ perceptions of feeling accepted (#31), valued (#32), and engaging with fellow students (#33). In each case, second year BS data showed a greater proportion of responses in the two most favourable categories. Analyses of third year BS data confirmed that appraisals were significantly better than year one (#31 $U=33665$, $p<.001$; #32 $U=4837$, $p<.01$; #33 $U=5628$, $p<.05$) but not year two (#31 $U=26292$, $p=.334$; #32 $U=26626$, $p=.532$; #33 $U=25823$, $p=.251$), indicating that these social self-perceptions plateaued in year two.

Agreement between samples

For the 35 items assessed in years one and two, Table 2 depicts agreement between WS and BS samples in terms of significant/non-significant effects. As a percentage, this represents a perfect agreement of 66%. A more liberal assessment was also applied to items where samples did not agree. Taking each item in turn, the sample with a significant effect was scrutinised to establish the proportion of first year respondents who chose the two most popular response categories. The corresponding second year data were then examined to establish the direction of change in this proportion (i.e. growth or contraction). Now, the sample without significant effects

was subject to the same process to identify if, between years, data showed the same direction of change. When items meeting these criteria (#8,16,18,20,21,26,29,33) were added to those with perfect agreement, consonance between WS and BS samples reached 89%.

		Between-subjects sample (BS)	
		Significant difference	No significant difference
Within-subjects sample (WS)	Significant difference	11	4
	No significant difference	8	12

Table 2. Agreement between WS and BS samples, regarding significant differences in survey items (n=35) from year one to year two

Discussion

Undergraduate surveys typically overlook the middle year(s). The UK's National Student Survey (NSS) is conducted amongst third years, whilst the US National Survey of Student Engagement focusses on freshman and senior students (Ishitani 2016). Whilst it makes sense to survey students near the end of their courses, when they have accrued comprehensive university experiences, this study found significant changes in student perceptions during year two, a window when adverse patterns of academic performance and retention are reported.

Social self-perceptions

In this subdomain, the second year appeared to be a largely positive time. A small deterioration in perceptions that university met social expectations was limited to the WS sample. Across samples and time points, around 70% reported that their expectations were fully/mostly met. Second years also reported increased involvement in

community activities/volunteering and university clubs/societies, together with continued trips to pubs/clubs/gigs with university friends. These findings indicate deepening social integration. With finite time available, authors have pondered whether engagement in wider university experiences is inversely associated with commitment to learning (Stewart and Darwent 2015). The data offered no evidence that social and academic engagement are mutually exclusive. Participants reported stable attendance of $\geq 75\%$ between years one and two, and increased engagement in independent study. Over time, students may become better at self-management, enabling them to engage in varied experiences without undermining studies. Willcoxson et al. (2011) found that juggling competing demands was a salient issue in year one but not year two.

Some students worked alongside their academic and social commitments, with this proportion increasing between years one and two. There was, however, no change in the volume of work undertaken. The consistently popular response – 10-15 hours per week – coincides with guidance that students should avoid working over 12 hours/week (Thomas 2002). Stability in the volume of paid work challenges the hypothesis that students ‘frontload’ their involvement in the labour market, by engaging heavily early on and reducing involvement as academic demands intensify (Yorke 2015). The general relationship between study and paid employment warrants further investigation, given that well-chosen work can benefit subsequent career prospects (Webb et al. 2017). Regulatory changes in the UK may see more students combining work and study. Part-time undergraduates can now apply for tuition fee loans previously reserved for full-time students.

Findings were also encouraging regarding students’ sense of being accepted, feeling valued, engaging with peers, and having a place at university. These items started from a strong baseline in year one, with the first three improving further during year two. At least 75% of first and second years agreed/strongly agreed with these sentiments. The lack of additional improvement in year three suggests that year two is when many students realise an optimal sense of belonging. One aspect that stood apart was students’ perceptions that they would be missed should they not attend lectures. Whilst no temporal trends were observed, across samples only around half of respondents believed their absence would be noted. This finding may allude to a sense of anonymity experienced by some students in the ‘massified’ HE system.

Perceptions of teachers

Over 85% of respondents agreed/strongly agreed that teaching staff were friendly and approachable, with significant improvement from years one to two in the BS sample. Students clearly placed high value on

scheduled opportunities to engage with faculty. Guidance accompanying the TLS defined contact time as *'timetabled hours for attending lectures, seminars, tutorials, practicals, fieldwork etc.'* Between years one and two, the WS and BS samples both showed a significant rise, to around one third, in the proportion who felt this contact was insufficient, replicating previous findings (Bates and Kaye 2014; Money et al. 2017). Objective contact hours were not available for current respondents. However, whole institution data, submitted to the Higher Education Statistics Agency in 2016, indicate minimal reduction in scheduled contact between years one (384) and two (372), echoing sectoral norms. Consequently, responses may indicate that second years would like scheduled contact to match or even surpass year one. This vision appears in tension with traditional models, where students progressively gain greater independence (Killam and Degges-White 2017). It may be overly simplistic, however, to view independence and regular contact as mutually exclusive. The second year at university represents a substantial step up. In terms of knowledge, students must often master new material to achieve the 'comprehensive' understanding demanded by quality assurance frameworks (Milsom and Yorke 2015). For example, many second years encounter modules in statistics or research methods, in preparation for a final year dissertation. In terms of skills (e.g. criticality, communication), the gradient between years one and two is described as steeper than years two and three (Milsom and Yorke, 2014). Moreover, collaborative learning activities (e.g. group work, peer assessment) may be difficult for students to organise independently outside the formal timetable, due to caring responsibilities, commuting or employment. Against this backdrop, it is understandable that second years value a substantial schedule of formal contact time, where access is guaranteed to expert teachers and peers. Such perspectives should not be taken as a rejection of independent study. Despite proving an ongoing challenge for around 45% of respondents, reported difficulties with independent study reduced from year one to two. Moreover, both samples showed increasing engagement across time, with over half of third years reporting above 10 hours/week.

Personal tutoring represents a specific form of contact, which may include unscheduled exchanges outside the classroom. Baseline perceptions of personal tutors from year one were highly favourable, with some evidence of further enhancements during year two. By the second year, over 75% of WS and BS cohorts found their tutor approachable, encouraging and useful. Consistent with York (2015), however, between years one and two the frequency of personal tutor meetings declined significantly in both samples. The norm became a single meeting each term, with around 20% reporting no meeting whatsoever. From year one to two, there were corresponding declines in the perceived adequacy of personal tutor contact, which reached significance in both samples. This negative trend was more marked than for perceptions of general contact time: by year two around

half of respondents were unhappy with the number of personal tutor meetings. One aspect – tutors’ aptitude for discussing non-academic issues – attracted slightly different results, with around 60% of respondents offering positive ratings. Research indicates that students consult their family, over faculty, regarding personal issues (Zaitseva et al. 2015). Moreover, with expansion of professional support in universities (e.g. academic skills developers, well-being practitioners) and increasing possibilities for self-help (e.g. internet resources), students may be accessing support in ways which bypass the tutor-tutee channel. Many respondents probably had not engaged with their tutor around such matters, as reflected by the significant proportion of neutral responses (‘not sure’).

It is worth pondering how students would like to use the extra contact time that many call for. Assessment and feedback offers a possibility. Previous surveys identified support around assessment as a means of enhancing the general curriculum (Neves and Hillman, 2016) and personal tutoring space (Webb and Cotton 2018). A stable majority of around 75% were satisfied with the volume of assessment. Between years one and two, however, perceptions of feedback significantly declined in both samples, such that over 40% felt it was not always/usually helpful. During scheduled contact hours, activities that develop students’ ‘assessment literacy’ might be embedded (e.g. familiarisation with marking rubrics, peer marking; Jones et al. 2017; Rust et al. 2003). Meanwhile, personal tutoring exchanges could include opportunities to deconstruct feedback, identifying pointers for future performance. This would represent a pro-active, developmental approach, as opposed to a deficit model whereby tutors wait for individuals to present with difficulties (Jacklin and Le Riche 2009). The recovery in perceptions of feedback in year three may relate to students’ dissertation projects, which typically afford sustained one-to-one or small group contact with supervisors.

Academic self-perceptions

Developments in this subdomain were mixed. Whilst perceived difficulties stemming from academic language significantly reduced from year one to year two, around 30% reported ongoing challenges. Moreover, from an unassured baseline in year one, there was no improvement during year two in a trio of transferable skills. Only around two thirds clearly indicated that they ask questions to gain clarity, and only around one third clearly asserted that they were happy to join class discussions and make presentations. Consistent with Whittle (2016), respondents appeared to hold higher appraisals of their lecturers and curriculum than their own academic competencies. Second year responses were collected with just over one third of respondents’ programme

remaining. It is concerning, therefore, that there had been little progress in these skills. As mentioned, the curriculum itself offers a channel for enhancing such competencies. A host of ‘active’ teaching methods (e.g. Response Ware, group problem solving) might be embedded in contact hours to nurture students’ confidence to present and discuss ideas (Freeman et al. 2014). Such initiatives carry low stakes, in that students’ performance in class does not immediately affect their summative marks. Efforts to enhance the curriculum in this fashion might, one assume, be complicated where classes are large. Encouragingly, from year one to two the proportion who agreed/strongly agreed that large classes were a source of difficulty declined below 30%, with a significant effect in the BS sample. This proportion is, nonetheless, substantial. Whilst learning technology offers new ways of engaging large cohorts, it is important to note that under 20% advocated greater use. Clearly, there remains a challenge for practitioners to identify effective teaching strategies, which develop core skills without over-reliance on technology.

Perceptions of atmosphere and teaching/learning

These two subdomains stand out, with the volume of grey shading in Table 1 suggesting adverse trends. Starting with perceptions of atmosphere, it is important to acknowledge that both of these global measures continued to attract largely favourable responses. Over 75% of second years reported enjoying their course very much/to some extent, and saw their academic experiences as fully/mostly meeting expectations. Nonetheless, these results represented a decline from year one which, in both samples, met or closely approached significance. Interestingly, responses to both items recovered during year three, consistent with Whittle (2016). This U-shaped pattern raises the question whether it is necessary to intervene during year two. It is important to recognise, however, that suboptimal educational experiences during this window may be implicated in negative outcomes that cannot be remedied in subsequent year(s) (e.g. impaired GPA/degree classification, withdrawal from studies). Indeed, there was a significant rise between years in contemplation of drop-out, a marker for actual withdrawal (Willcoxson et al. 2011). During year two it appears that students who harboured thoughts of drop-out from year one were joined by a new group of contemplators. The largest survey of students who dropped out of UK HE identified personal circumstances, finance, and caring responsibilities as leading explanations (Rose-Adams 2012). Nonetheless, 37% cited course/institution-related factors as the primary reason for departure. It is important for institutions to consider how the curriculum influences drop-out decisions, and to broaden this focus beyond first year.

Most items from the teaching/learning subdomain have been considered earlier in this discussion. A remaining item – perceptions of overall teaching quality – saw a significant decline between years one and two, in both samples. By year two, the proportion providing the most favourable appraisal (‘consistently good’) has fallen below 30%, indicating substantial opportunities for enhancement. Reassuringly, formal BS analyses indicated a recovery in responses during year three. This U-shaped profile may reflect opportunities in the final year for increased specialisation and completion of a dissertation project that offers sustained access to faculty - in small groups or one-to-one - around material of particular interest to students. Alternatively, anecdotal reports from the UK suggest that the most talented teaching staff are deployed in year three, when the pivotal NSS is conducted (Zaitseva et al. 2015).

Within-subjects versus between-subjects data

Consistent with findings for academic performance (Yorke and Zaitseva 2013), there was good agreement between samples, which became compelling when more liberal methods of comparison was applied. It appears that BS measures are sufficiently accurate enough to make ‘probabilistic’ decisions on operational aspects of teaching, assessment and course organisation, which cannot be deferred until evidence meets stringent scientific standards (e.g. p -values $<.05$) (Yorke et al. 2015). The nimble decision-making facilitated by BS approaches allows research participants to benefit before completing their studies. Naturally, there remains value in longitudinal work to unravel the complex factors implicated in performance and persistence across the student journey.

Methodological considerations

One contention is that differences in student perceptions between years are illusionary. Gloomier responses from second years may, in reality, reflect a slow deflation in unrealistic perspectives with which many entered university. Authors have described a mismatch between student expectations and reality around issues such as staff contact (Bates and Kaye 2014; Borghi et al. 2016; Money et al. 2017). Expectations amongst respondents were certainly high, as evidenced by the stable proportion of over 70% who anticipated a first or upper second-class degree. Nonetheless, careful consideration regarding the timing of the TLS (March–May in all years) challenges this interpretation. First years had been at university for six months when they responded, in which

time they had completed summative assessments. Moreover, the host HEI is unusual for the UK in that first year assessments contribute to the final degree classification. Overall, one can hypothesise that when first years completed the TLS any ‘honeymoon’ period was already over, and that deterioration in some items during the following year reflects genuine differences in the university experience. Response rates were low, typical of blanket questionnaires in HE settings (Nulty 2008). Nonetheless, the current sample size – especially for BS analyses - compares well with previous studies in this domain (e.g. Whittle 2016). The use of a replication design, via the WS and BS samples, also adds weight to the findings.

Conclusion

In several areas results show that the second year at university is a positive time. Broadly-speaking, students showed deepening social integration and, from a favourable baseline in year one, developed more positive perceptions of their teachers. There was, however, significant decline in students’ perceptions that their courses were enjoyable and met expectations, together with a rise in thoughts about dropping-out. It is likely that these trends relate to adverse changes in how specific aspects of the teaching/learning provision were perceived. Ratings of the quality of teaching and feedback, adequacy of contact hours, and access to personal tutoring, fell significantly between years one and two. Given the scale of some of these changes, it appears appropriate for institutions to systematically survey often over-looked second year students, as happens presently in a minority of universities (e.g. Liverpool John Moores University, University of Plymouth).

The current results offer initial ideas about where to focus interventions aimed at enhancing the second year university experience. It is now important to use alternative methodologies (e.g. cohort studies) to demonstrate causal links between these elements and second years’ perceptions, performance and retention. This study confirms the unique character of the second year at university, and supports calls for explicit attention to this topic in educational research (Hunter et al. 2010; Whittle 2016).

Acknowledgements

We acknowledge Ms Tricia Nash who helped administer the TLS, and respondents who contributed time to this study. Views expressed in this report, and any errors or omissions, remain the responsibility of the authors.

Declaration of Interest

None.

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